

Mercuric Iodide Anticoincidence Shield for Gamma-Ray Spectrometer, Phase II

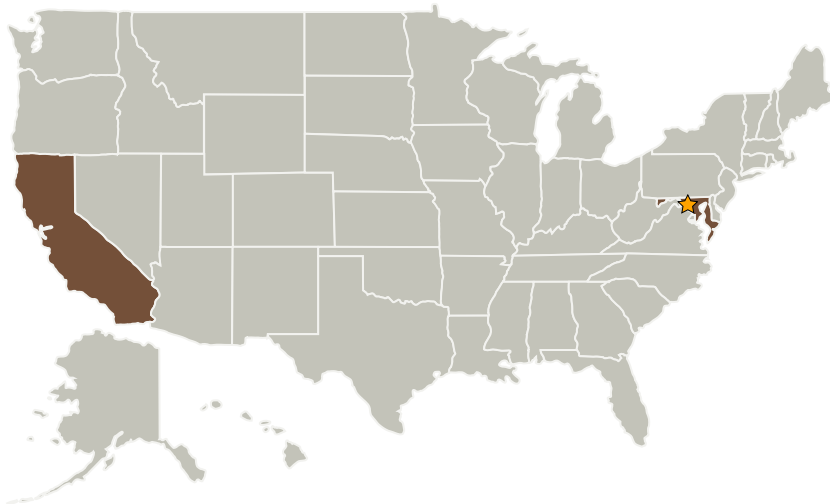
Completed Technology Project (2004 - 2006)



Project Introduction

We utilize a new detector material, polycrystalline mercuric iodide, for background suppression by active anticoincidence shielding in gamma-ray spectrometers. Two proposed NASA missions will require anticoincidence shielding for gamma-ray spectrometers: the Mars Lander and a Space Science Vision Mission expected to visit Titan, one of Saturn's moons. Shielding improves the performance of gamma-ray spectrometers by reducing the effect of charged particle interactions which can not be distinguished from true gamma-ray interactions by the spectrometer. Active shields produce a blanking signal when a charged particle is detected, so that the signal from the spectrometer can be ignored during the spectrometer's charged-particle interaction. While it is well known that this technique produces significant improvement in gamma-ray spectrometer performance, the technology to implement it is lacking. The attributes of mercuric iodide make it an excellent candidate for anticoincidence shielding detectors. Because of its detection characteristics, light weight, small size, low cost, robustness, and ease of application to non-planar geometries, this material can replace the costly, heavy, and bulky scintillator/photomultiplier tube (PMT) systems currently in use. The application of this new material for space-based astrophysical observations provides excellent background suppression with improved mass and volume characteristics.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Photon Imaging Inc	Supporting Organization	Industry	Northridge, California

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.1 Detectors and Focal Planes